ARCADIS
Infrastructure, environment, facilities

Imagine the result

Facility (Office Building) Vapor Intrusion Evaluation Summary

Former Bally Engineered Structures Facility
Bally Borough, Berks County, Pennsylvania

August 2008

ARCADIS

Infrastructure, environment, facilities

Facility (Office Building) Vapor Intrusion Evaluation Summary

Former Bally Engineered Structures Facility

Bally Borough, Berks County, Pennsylvania

August 2008

Imagine the result

ARCADIS

Peng Jin
Engineer II

Christopher T. Sharpe
Project Scientist

Frank C. Natitus, P.E.
Principal Engineer

Facility (Office Building) Vapor Intrusion Evaluation Summary

Former Bally Engineered Structures Facility

Prepared for:
American Household, Inc.

Prepared by:
ARCADIS
6 Terry Drive
Suite 300
Newtown
Pennsylvania 18940
Tel 267.685.1800
Fax 267.685.1801

Our Ref.:
NP000597.0006

Date:
August 2008

1. Introduction

On behalf of American Household, Inc. (AHI), ARCADIS U.S., Inc. (ARCADIS) has prepared this report to summarize the results of the supplemental facility subslab soil vapor and indoor air investigation conducted at the Bally Brooke Business Center Office Building (office building) at the site of the former Bally Engineered Structures (BES) facility (the Facility or Site) on March 11 and 12, 2008. The investigation activities were conducted to supplement the evaluation of potential vapor intrusion at the Site associated with volatile organic compounds (VOCs) in soil and groundwater.

1.1 Project Scope and Objectives

The objective of the supplemental office building investigation was to identify any possible human health risks associated with potential vapor intrusion of site-related Constituents of Potential Concern (COPCs) present in soil and groundwater beneath the building (Table 1). As discussed in a January 25, 2008 meeting between AHI, ARCADIS, and the United States Environmental Protection Agency (USEPA), the locations of former lagoons or water impoundments, shown on **Figure 2**, were determined to be located in the vicinity of the existing office building. A total of five samples were collected at the office building above the approximate locations of the former lagoons as noted below:

- Two indoor air quality (IAQ) samples; and,
- Three subslab soil vapor (SV) samples and one duplicate.

This report presents a comparison of the IAQ sample analytical results to the USEPA Regional Screening Levels for indoor air and Pennsylvania Department of Environment (PADEP) Act 2 Medium-Specific Concentration for Indoor Air Quality (MSC_{IAQ}) under a non-residential land use scenario.

1.2 Report Organization

In addition to this introduction, this report consists of the following five sections:

- Section 2 presents a summary of background, including historical soil vapor intrusion investigations in the office building;

- Section 3 presents details of the soil vapor and indoor air sampling performed in March 2008 and a discussion of the laboratory analytical results including data validation;

- Section 4 presents the summary and conclusions, including recommendations for future activities; and

- Section 5 provides the references that were used to develop this report.

2. Background

The Site is located on the southwestern edge of the Borough of Bally, Berks County, Pennsylvania (**Figure 1**). The Site was formerly a manufacturing facility for the production of insulated freezer cases. Historical operations included the use of chlorinated compounds to clean and degrease molds, nozzles and small parts used in the manufacturing process.

2.1 Physical Settings

The facility was expanded in several stages, such that the building itself is composed of a number of segments varying in age and construction. Presently, the facility is used for several different commercial and industrial purposes, ranging from fabrication and light manufacturing to office space. Some areas have been reconditioned and modified according to the needs of the present tenants. These modifications have not been extensively documented, but included the installation of raised flooring and electrical/plumbing modifications.

USEPA historical aerial photographs of the Facility indicate that the office building overlies an area where lagoons or water impoundments formerly existed (**Figure 2**). The businesses currently operating in this office building are:

- Condict and Co. (office);

- Hunsinger Plastics (office); and

- Curves (workout center).

This building was constructed in approximately 1970. The office building has undergone some improvements, including carpeting/tiled floors, finished wall systems,

and drop ceilings. Heating and air conditioning are provided by a central forced air system and/or direct vent window/wall units. Ceiling heights are approximately 8 to 10 feet. A basement underlies about one-third of the building footprint; this is the only basement present on the Site. The basement has a competent concrete floor and contains two sealed sumps that collect water and pump it to grade level. **Figure 2** depicts the office building layout.

2.2 Previous Vapor Intrusion Investigations at the Office Building

This section presents the results of the previous vapor intrusion investigations that were conducted in 2005 and 2006 at the office building at the request of the USEPA.

2005 Tracer Gas Investigation

- In March 2005, one subslab vapor sample, TG-3, was collected from the basement and analyzed for the COPCs. The results are presented in **Table 2**. The sample location is shown on **Figure 2.**

- TCE was detected in subslab soil gas at 9.6 ug/m^3, and 1,1,1-TCA was detected at 0.95 ug/m^3. Both detections were below the Pennsylvania Department of Environment (PADEP) Act 2 Medium-Specific Concentration for Indoor Air Quality (MSC_{IAQ}) as well as the MSC for soil gas (MSC_{SG}) under a non-residential land use.

2006 Supplemental Soil Vapor / Indoor Air Sampling

- In February 2006, one subslab soil vapor sample (SV-8) was collected from the basement to confirm the March 2005 sampling result. Two indoor air quality samples (IAQ-3A and IAQ-3B) were collected from both the ground floor and the basement in order to investigate air quality throughout the building. Indoor air sample IAQ-3A and subslab soil vapor sample SV-8 were co-located in the building basement. Indoor air sample IAQ-3B and its duplicate (IAQ-3B Dup) were collected on the ground floor, above the basement sample location. During the subslab soil vapor sampling, the flooring was observed to be approximately 2-inch-thick competent concrete. The results are presented in **Table 2**. The sample location is shown on **Figure 2.**

- The TCE concentration in the subslab soil vapor sample was 9.1 ug/m^3 in SV-8. TCE was detected in indoor air samples at concentrations of 1.4 ug/m^3 (IAQ-3B)

and 2.9 ug/m^3 (IAQ-3A). The observed TCE concentration in indoor air are both lower than the USEPA Regional Screening Levels. Although these results were previously compared to the USEPA Region 3 ambient air Risk Based Concentration (RBC) of 0.016 ug/m^3, the Region 3 RBCs have since been rescinded and replaced with Regional Screening Levels. 1,1,1-TCA and 1,1-DCE were also detected in at least one indoor air sample; however, the concentrations were less than their respective ambient air RBCs and non-residential MSC_{IAQ} and are also below the new Regional Screening Levels.

3. 2008 Supplemental Soil Vapor Intrusion Investigation in the Office Building

Based upon the historical USEPA aerial photographs of the Facility, the office building overlies an area where lagoons or water impoundments formerly existed. Pursuant to a USEPA request additional investigation and testing was performed to evaluate the potential for vapor intrusion into the indoor air in the office building.

A total of five samples, two indoor air quality samples and three subslab soil vapor samples, were collected on March 11 and 12, 2008 in the office building at locations shown on **Figure 2**. Sample IAQ-1_031108 was collected in a corner of one of the open offices in the center of the office building, and sample IAQ-2_031108 was collected in the Condict Company office. Both samples were collected above the historical lagoon or water impoundment area. Soil gas sample SS-1_031208 was collected in a hallway to an open office in the center of the building, close to IAQ-1_031108. Soil gas sample SS-2_031208 was collected inside the Condict Company office. Finally, soil gas sample SS-3_031208 and its duplicate were collected in a closet close to the building manager's office. All subslab soil gas samples were also collected above the historical lagoon or water impoundment area.

Sampling followed standard procedures provided in **Appendix A**. The sampling logs are provided in **Appendix B.**

3.1 Analytical Methods

The samples collected from the office building were submitted to Air Toxics, Ltd. for gas chromatography/mass spectroscopy (GC/MS) analysis by modified Method TO-15 for the COPCs listed in **Table 1**.

Subslab soil vapor samples were analyzed by the low-level TO-15 method and indoor air samples were analyzed by the SIM TO-15 method. Although both methods are

modified for low level VOCs, low-level TO-15 method involves a full GC/MS scan mode that continuously scans a wide range of mass to charge ratios, while SIM TO-15 method uses a select ion monitoring mode for compounds on the target list. Target laboratory reporting limits (RL) for each method are included in **Table 1**. Concentrations presented in parts per billion volume (ppbv) were converted to $\mu g/m^3$ using the following equation:

$\mu g/m^3$ = (ppbv x molecular weight)/24.45

where 24.45 is the molar volume of air, in liters, at 25°C and 760 torr.

3.2 Indoor Air Quality Sampling Results

Indoor air quality analytical results from the March 2008 sampling event are provided in **Table 2**. For the purpose of evaluating sample analytical results, observed concentrations were compared to:

- USEPA (2008) Regional Risk-Based Screening Levels) for indoor air under an industrial land-use;
- Pennsylvania Department of Environmental Protection (PADEP) (2004) Act 2 Medium-Specific Concentration for Indoor Air Quality (MSC_{IAQ}) under a non-residential land use; and,
- Historical indoor air quality analytical data of the office building.

TCE and 1,1,1-TCA were detected in both samples. However 1,1-DCE, which was previously detected in indoor air during the 2006 Supplemental Soil Vapor / Indoor Air Sampling event, was not detected this time. In sample IAQ-1_031108, 4.0 ug/m^3 TCE and 1.3 ug/m^3 1,1,1-TCA were detected. In sample IAQ-2_031108, 3.5 ug/m^3 TCE and 1.1 ug/m^3 1,1,1-TCA were detected. All TCE and 1,1,1-TCA sample results are less that the Regional Screening Levels of 6.1 ug/m^3 and 22,000 ug/m^3, respectively, and significantly lower than their respective PADEP Nonresidential Indoor Air MSC_{IAQ}. TCE and 1,1,1-TCA indoor air results are also similar to concentrations detected during the 2006 sampling event.

3.3 Subslab Soil Vapor Sampling Results

Subslab soil vapor analytical results from the March 2008 sampling event are presented in **Table 2**. During the subslab soil vapor sampling, the flooring was observed to be approximately 6.5-inch thick competent concrete and covered by carpet. For the purpose of evaluating sample analytical results, observed concentrations were compared to historical subslab soil vapor data as well as PADEP Nonresidential Soil Gas MSC_{SG}. USEPA Regional Screening Levels are not available for subslab soil gas.

TCE and 1,1,1-TCA were both detected in subslab vapor samples in the office building. In sample SS-1_031208, TCE was detected at 1.3 ug/m^3 and 1,1,1-TCA was not detected above the laboratory reporting limit. In sample SS-2_031208, 1.0 ug/m^3 1,1,1-TCA was detected, and TCE was not detected above the laboratory reporting limit. In sample SS-3_031208 and its duplicate (noted in parentheses), 4.2 (5.0) ug/m^3 TCE and 1.0 (1.5) ug/m^3 1,1,1-TCA were detected. All TCE and 1,1,1-TCA sample results are significantly lower than their respective PADEP Nonresidential Soil Gas MSC_{SG}. Although there are no USEPA Regional Screening Levels for soil gas, all results in soil gas are less than the industrial indoor air Regional Screening Levels; indicating that transport of soil gas into indoor air at concentrations above Regional Screening Levels is not possible. Finally, compared to historical data, TCE was detected at slightly lower concentrations compared to 2005 and 2006 results. 1,1,1-TCA was detected at concentrations consistent with previous results.

3.4 Data Validation

The purpose of data validation is to determine the reliability of the chemical analyses and the accuracy and precision of data generated by the laboratory. The quality of laboratory data was evaluated by comparison to a set of quality control criteria, including precision, accuracy, and completeness.

Two analytical data packages were generated by the laboratory for the March 2008 samples. The laboratory reports were reviewed for completeness and compliance with the deliverable requirements. An ARCADIS Level IV data validation was completed upon data package receipt. Data are provided electronically in **Appendix C**. Method blanks were prepared and analyzed in conjunction with the field samples to monitor potential contamination impacts during analysis. No target compounds were detected in any of the method blanks. Laboratory control samples (LCSs) were included with each analytical batch to establish method control within the laboratory environment. All

LCS analytical results associated with project samples were acceptable. Field duplicates were collected to evaluate the precision of sample collection as well as analytical method performance. Results for TCE and 1,1,1-TCA in SS-3_031208 and its duplicate were within the control limit.

Based on the data validation, the data gathered under this investigation meet the project and analytical data quality objectives. One hundred percent of the samples were analyzed as requested on the chains of custody or corrected through communication with the project chemist. The data are considered to be of known and documented quality. One hundred percent of the data generated are usable for the intended purpose as qualified during the review and verification assessment. Data validation reports are provided in **Appendix D**.

4. Summary and Conclusions

The supplemental investigation performed by ARCADIS in March 2008 evaluated the potential impacts to indoor air quality from vapor intrusion in the Bally Brooke Business Center Office Building. A total of three subslab soil vapor and two indoor air quality samples were collected between on March 11 and 12, 2008. TCE and 1,1,1-TCA were detected in both indoor air samples at concentrations lower than USEPA Regional Screening Levels and PADEP Nonresidential Indoor Air MSC_{IAQ}. Both TCE and 1,1,1-TCA were detected in two of three subslab soil vapor samples at concentrations significantly lower than the PADEP Nonresidential Soil Gas MSC_{SG} , similar to historical analytical data. These results all indicate that concentrations in indoor air are associated with a cancer risk less than 1×10^{-6} or de miminis levels. Therefore, no further action is proposed for the office building.

5. References

The Office of Air Quality Planning and Standards, May 1988. Issues Relating to VOC Regulation Cutpoints, Deficiencies, and Deviations.

Pennsylvania Department of Health and Environment (PADEP). July 2004. Final Draft Guidance on Vapor Intrusion into Buildings from Groundwater and Soil under the Act 2 Statewide Health Standard. Publication 253-0300-100.

National Center for Environmental Assessment (NCEA). 2001. Trichloroethylene Health Risk Assessment: Synthesis and Characterization (External Review Draft). U.S. Environmental Protection Agency, Office of Research and Development,

National Center for Environmental Assessment, Washington Office, Washington, DC, EPA/600/P-01/002A, 2001.

U.S. Environmental Protection Agency (USEPA). 1989. Risk Assessment Guidance for Superfund (RAGS): Volume I Human Health Evaluation Manual (Part A). EPA/540/1 89/002. December.

U.S. Environmental Protection Agency (USEPA). 1991. Risk Assessment Guidance for Superfund, Human Health Evaluation Manual: Standard Default Exposure Factors. OSWER Directive 9285.6 03.

U.S. Environmental Protection Agency (USEPA). 1997. Exposure Factors Handbook: I, II, and III. EPA/600/P 95 002Ba, Bb, and Bc. Science Advisory Board Review Draft. August.

U.S. Environmental Protection Agency (USEPA). 2002. User's Guide For Evaluating Subsurface Vapor Intrusion Into Buildings. U.S. Environmental Protection Agency, Office of Emergency and Remedial Response, Washington, DC. June 19.

U.S. Environmental Protection Agency (USEPA). 2003. Human Health Toxicity Values in Superfund Risk Assessments. OSWER Directive 9285.7-53.

U.S. Environmental Protection Agency (USEPA). 2007. Region 3 Risk-Based Concentration Table. October. Internet Access: (http://www.epa.gov/reg3hwmd/risk/).

U.S. Environmental Protection Agency (USEPA). 2008. Integrated Risk Information System (IRIS). Office of Research and Development, National Center of Environmental Assessment. Internet access: (http://www.epa.gov/iris).

U.S. Environmental Protection Agency (USEPA). 2008. Regional Screening Levels for Chemical Contaminants at Superfund Sites. http://epa-prgs.ornl.gov/chemicals/index.shtmlList bullet (Alt-B)

Table 1. Summary of Site Specific COPCs
Former BES Facility, Bally, Pennsylvania

Constituent of Potential Concern (COPC)	CAS No.	Air Toxics Reporting Limits		Shallow Soil Gas Screening Level (USEPA, 2002) (ug/m^3)
		Low-Level Analysis (ug/m^3)	SIM analysis (ug/m^3)	
1,1-Dichloroethane	75-01-4	0.1	0.02	5000
1,1-Dichloroethene	75-34-3	0.1	0.01	2000
cis-1,2-Dichloroethene	75-35-4	0.1	0.02	350
1,1,1-Trichloroethane	156-59-2	0.1	0.02	22,000
Trichloroethene	71-55-6	0.1	0.02	0.22
Vinyl Chloride	79-01-6	0.1	0.01	2.8

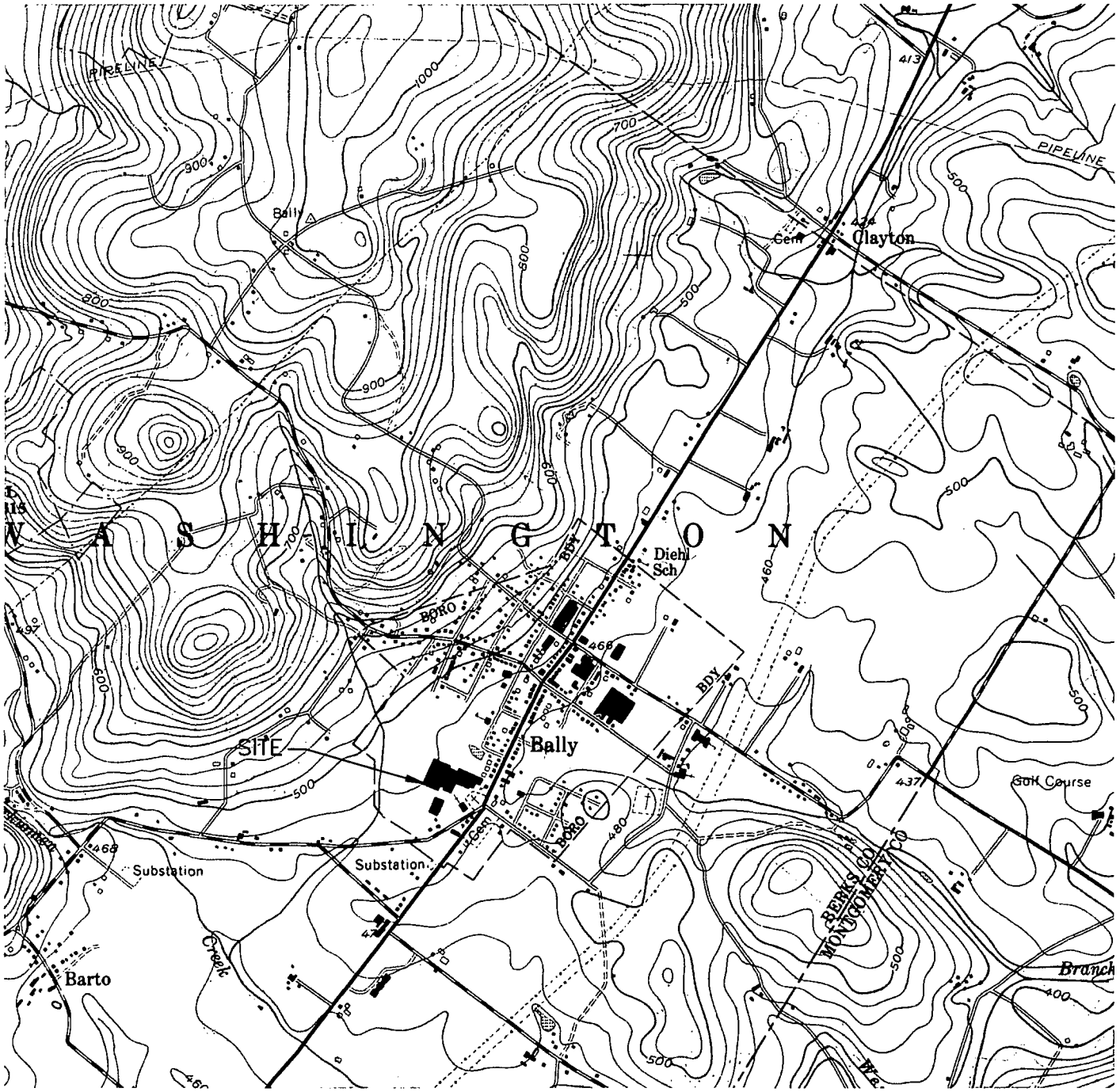
Notes:
Laboratory reporting limits may not be achievable under all conditions.

ARCADIS

Table 2. Summary of March 2008 Office Building Sampling Results
Former BES Facility, Bally, Pennsylvania

Location	Sample ID	Sample Date	Medium	Trichloroethene	1,1,-Dichloroethene	1,1-Dichloroethane	cis-1,2-Dichloroethene	1,1,1-Trichloroethane	Vinyl chloride
	USEPA Region 3 Ambient Air RBC Residential			0.016	220	510	37	1,000	0.072
	PADEP Indoor Air MSC_{IAQ} Nonresidential			48	580	510	100	6,100	9.5
Sub-Slab	TG-3	3/24/2005	SV	9.6	<0.063	<0.13	<0.14	0.95	<0.04
	SV-8	2/28/2006	SV	9.1	<0.58	<0.59	<0.58	<0.80	<0.37
	SS-1_031208	3/12/2008	SV	1.3	<0.76	<0.77	<0.76	<1.0	<0.49
	SS-2_031208	3/12/2008	SV	<1.0	<0.74	<0.76	<0.74	1.0	<0.48
	SS-3_031208	3/12/2008	SV	4.2	<0.78	<0.79	<0.78	1.0J	<0.50
	SS-13_031208 (Dup for SS-3)	3/12/2008	SV	5	<0.80	<0.81	<0.80	1.5	<0.51
Indoor Air	IAQ-3A	2/24/2006	IA (Basement)	2.9	0.065	<0.13	<0.12	0.38	<0.043
	IAQ-3B	2/24/2006	IA (1st Floor)	1.4	<0.067	<0.14	<0.13	0.38	<0.043
	IAQ-3B Dup	2/24/2006	IA (1st Floor)	1.4	0.07	<0.14	<0.13	0.4	<0.043
	IAQ-1_031108	3/11/2008	IA	4.0	<0.069	<0.14	<0.14	1.3	<0.045
	IAQ-2_031108	3/11/2008	IA	3.5	<0.071	<0.14	<0.14	1.1	<0.046

Notes
All results are presented in ug/m^3
J - Results are estimated.
SV - Subslab soil vapor
IA - Indoor air



SOURCE: USGS 7.5 MIN. TOPOGRAPHICAL QUADRANGLES EAST GREENVILLE, PENNSYLVANIA 1967, PHOTOREVISED 1985.

Area Manager	A. ROBINSON
Project Director	M. WOLFERT
Task Manager	C. SHARPE
Technical Review	S. POTTER

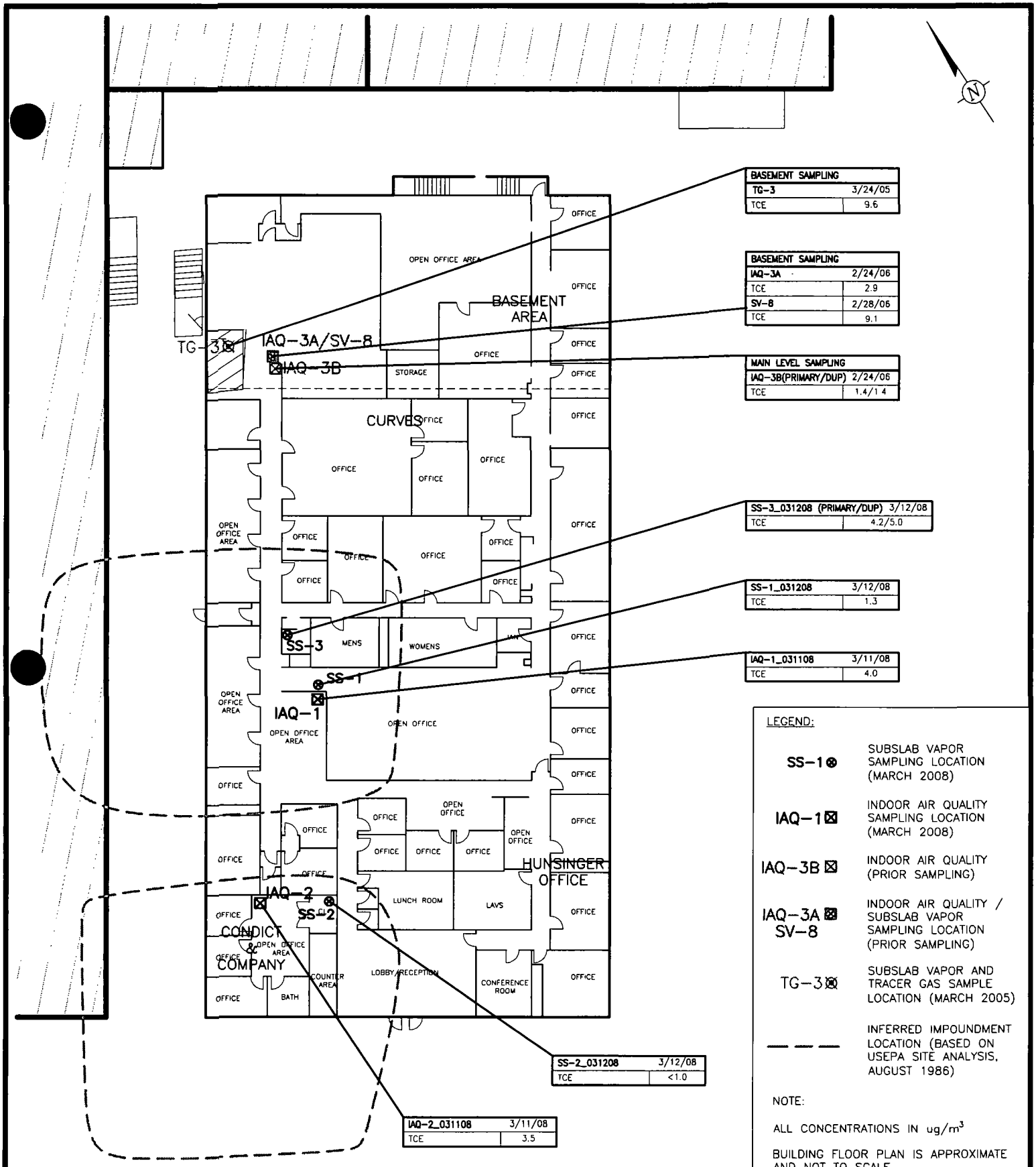
ARCADIS
6 Terry Drive
Suite 300
Newtown, Pa 18940
Tel: 267/685-1800 Fax: 267/685-1801
www.arcadis-us.com

AMERICAN HOUSEHOLD, INC.
FORMER BALLY ENGINEERED STRUCTURES

SITE LOCATION MAP

BALLY, PA

Project Number	NP000597.006
Drawing Date	2/6/2006
Figure	1
	AR101257



0 30
SCALE: 1"=30'

ARCADIS

DRAWN M. WASILEWSKI	DATE 4/15/08	PROJECT MANAGER M. BEDARD	DEPARTMENT MANAGER M. BEDARD
FORMER BES FACILITY OFFICE BUILDING FLOOR PLAN		LEAD DESIGN PROF. F. NATITUS	CHECKED C. SHARPE
BALLY BOROUGH BERKS COUNTY, PENNSYLVANIA		PROJECT NUMBER NP000597.0006	DRAWING NUMBER 2

AR101258

G:\APROJECT\AH Bally, PA\Vapor Intrusion\2008 Facility Sampling\Figures\FIG-2 FORMER BES FACILITY - OFFICE BUILDING - W INTERIOR DETAIL_041708.DWG 4/17/2008 - 3:26:03 PM Layout: 8.5x11 H

Appendix A

Standard Operating Procedures

STANDARD OPERATING PROCEDURE NO. 1

Chain-of-Custody Procedures

Scope: This procedure describes the Chain-of-Custody used to establish the necessary documentation to track sample possession from time of collection to analysis.

Purpose: The purpose of this procedure is to develop and maintain good quality control in field operations and uniformity between field personnel involved in the documentation of samples for shipment.

Equipment: Chain-of-Custody Record and Chain-of-Custody Seals

Procedure:

Prior to leaving the sampling site and/or prior to sealing sample cartons or coolers for shipment, the Chain-of-Custody Record must be completed.

Information to be provided on this form includes:

1. Project number and Location
2. Laboratory Identification
3. Sampling Party
4. Sample Identification (sample number)
5. Sample Bottle/Container Description
6. Date of Sampling
7. Signature of Persons including Chain-of-Custody and Dates and Times of Possession
8. Delivery Method (attach shipping bill)

Once the container is ready for shipment, Chain-of-Custody Seals shall be applied to the cooler in such a manner as to monitor tampering.

Upon change of possession, the record is to be signed and dated by both parties. The white (original) copy accompanies the shipment, the field sampler retains the yellow copy.

STANDARD OPERATING PROCEDURE NO. 2

Air/Vapor Sample Packaging and Shipment

Scope: This procedure describes acceptable methodology for packaging and shipping air/vapor samples to an analytical laboratory for chemical analyses.

Purpose: The purpose of this procedure is to provide a uniform and documented means of securely transporting environmental samples to the laboratory so as to preserve the integrity and quality of the sample(s).

Equipment: Packaging tape, mailing labels, chain-of-custody forms, chain-of-custody seals, and shipping forms.

Procedures:

1. Assemble all sample containers from the completed sampling event.
2. Locate, identify and record type of canister for each sample identification number on a chain-of-custody form.
3. Determine the total container count and cross check sample count.
4. Check to make sure canisters were labeled properly.
5. Place some shock absorbing material in the bottom of the package to prevent direct contact of the container with the bottom of the package.
6. Arrange canister to prevent movement.
7. Place the top copy of the chain-of-custody in package.
8. Close lid and place custody seals over the joint and cover with clear tape.
9. Properly complete and address a shipping form and affix to the lid of the package. Samples should be delivered to the laboratory by the next morning.
10. Deliver to an appropriate overnight courier or the laboratory.
11. File a copy of the chain-of-custody form and the shipping form in the project file.
12. Call laboratory the next morning to confirm arrival of samples.

STANDARD OPERATING PROCEDURE NO. 3

Subslab Soil Vapor Sampling

Scope: This procedure describes the methodology to be used for the collection of subslab soil vapor samples.

Purpose: The purpose of this procedure is to ensure good quality control in field operations, uniformity between different field personnel and to allow traceability of possible cause of errors in analytical results.

Equipment: Hammer Drill; 3/8 in. bit; tedlar bags; peristaltic pump; ¼ inch ID Masterflex tubing; concrete sealant; 6-L Summa™ canister; regulator; barometer

Procedure:

Probe Installation

1. Prior to subslab vapor probe installation, identify and mark utilities coming into the building from the outside (e.g., gas, water, sewer, refrigerant, and electrical lines) and utilities beneath (inside) the building.

2. Core hole through cement slab.

3. Drill an approximately 3/8 inch boring approximately 3 inches into subslab soil.

4. Remove the drill and cover the hole with inert material until the probe is ready to be inserted.

5. Install sampling apparatus (i.e., commercially available soil vapor point and tubing) so that it "floats" in the slab avoiding obstruction with subslab material.

6. Seal boring by creating an air-tight seal around sample tubing at ground surface using an inert material.

7. Check sampling apparatus connections. Note that barbed union fittings should be used for tubing connections. If there is a problem with obtaining fittings, the connections may be sealed using an inert material.

Soil Vapor Collection

8. Record location, date, time, weather, atmospheric pressure, approximate depth of subslab vapor samples, on Soil Vapor Sample Log.

9. Connect Tygon sample tubing to ¼ inch ID Masterflex tubing and a peristaltic pump and 1-L Tedlar bag. Use of a peristaltic pump will ensure that sampled air does not circulate through a pump causing potential cross contamination and leakage.

10. Purge vapor probe by filling two Tedlar bags or routing purge air to the exterior of the building with tubing. A purge volume of 2 L was chosen based on the assumption of a 2-inch sampling interval and an affected sample diameter of 0.61 m (2 ft). Purge rate should be approximately 200 cubic centimeters per minute (i.e., 5 minutes per Tedlar bag).

11. Record purge date and time on Soil Vapor Sample Log

12. Collect subslab vapor samples in evacuated 100 percent sim-certified 6-L Summa™ polished canisters equipped with regulators to control intake rate. Sampling rate should be approximately 200 cubic centimeters per minute. Check vacuum in canisters prior to sampling. At least 4-L of air will be collected in the canister for analysis (i.e. 20 minute collection time at 200 cubic centimeters per minute). Following sample collection, check and record final vacuum in canister. Submit canisters to a commercial laboratory for analysis. Record Sample ID, Date, Time and analysis requested on the Sample Label.

13. Record sample time on Soil Vapor Sample Log.

14. Remove sampling apparatus and seal the borehole annulus with an appropriate sealant to the original surface grade (*note duplicate sample collection method below).*

Duplicate Soil Vapor Sample Collection

1. Note duplicate sample location on Soil Vapor Sample Log.

2. Duplicate samples will be collected using duplicate tees and flow restrictors per laboratory guidance Check vacuum in canisters prior to sampling. At least 4-L of air will be collected in the canister for analysis (i.e. 20 minute collection time at 200 cubic centimeters per minute). Following sample collection, check and record final vacuum in canister. Record Duplicate Sample ID, Date, Time and analysis requested on the Sample Label.

3. Submit canisters to a commercial laboratory for analysis.

STANDARD OPERATING PROCEDURE NO. 5

Indoor Air Quality Sampling

Scope: This procedure describes the methodology to be used for the collection of Indoor Air Quality (IAQ) samples.

Purpose: The purpose of this procedure is to ensure good quality control in field operations, uniformity between different field personnel and to allow traceability of possible cause of errors in analytical results.

Equipment: ¼ inch ID Masterflex tubing; 6-L Summa™ canister; regulator/pressure gauge; barometer, IAQ Sample Log, ARCADIS Form IAQ – 01

Procedure:

Indoor Air Quality Sample Collection

Before Sampling

1. Record location, date, time, weather, atmospheric pressure, canister number, flow controller number, on IAQ Sample Log.

2. Verify gauge operation. Gauge on flow controller should read "zero" before use.

3. Verify initial vacuum of canister per laboratory guidance.

    a. Make sure canister valve is closed.

    b. Remove brass cap from top of canister.

    c. Attach gauge/flow controller to canister.

    d. Attach brass cap to influent side of gauge/flow controller tee fitting.

    e. Open and close valve quickly.

    f. Read vacuum on gauge (Initial vacuum of the canister should be greater than 25 in. of Hg. If it is not call AirToxics client services at 1-800-985-5955 and arrange for replacement). Record gauge reading on "Initial Vacuum" section on chain of custody, IAQ Sample log, and on canister tag.

During Sampling

4. Install flow controller, supplied by AirToxics, to top of pressure gauge.

5. Install approximately 3 – 5 ft. tubing to end of flow controller to assure sample is collected at breathing level.

6. Open valve ½ turn.

7. Record time of sample collection start in IAQ Sample log.

8. Check and record gauge pressure in IAQ Sample log after 4 hours of sampling time have elapsed. The sample will be an integrated 8 hour sample. (Note that the flow controllers are set by the laboratory such that some vacuum will remain following the set collection period.)

After Sampling

9. Verify and record final vacuum on IAQ sampling log and on canister tag.

10. Close valve on canister by hand tightening knob.

11. Disassemble pressure gauge and flow controller. Replace brass cap on canister.

12. Complete canister sample tag.

13. Return canisters and sampling apparatus in boxes provided by laboratory.

14. Fill out chain of custody (COC) and place lab. copy of COC in box.

15. Seal box and affix custody seal.

16. Record canister to lab via appropriate shipping method, taking into account canister holding times (14 – 30 days).

Duplicate Indoor Air Quality Sample Collection

1. If a duplicate sample has been collected, note duplicate sample location on IAQ Sample Log.

2. Duplicate samples will be collected using duplicate tees and flow restrictors per laboratory guidance. Check vacuum in canisters prior to sampling. At least 4-L of air will be collected in the canister for analysis. Following sample collection, check and record final vacuum in canister. Record Duplicate Sample ID, Date, Time and analysis requested on the Sample Label.

3. Submit canisters to a commercial laboratory for analysis as described above.

Appendix B

Sample Logs

ARCADIS
Infrastructure, environment, facilities

Soil-Vapor Sample Log

Sample ID: IAQ-1_031108
Date: 3/11/08
Time: 0820
Weather: Clear

Project Name and Number: Bally VI / NPS97.6
Sampling Personnel: PJ

DESCRIPTION OF SAMPLE LOCATION

Outdoor
Location
Est. depth to water (ft)
Soil type
Odor
Color

V Indoor
Location: Open office area
Basement: yes / (no)
Room size ft x ft: 15 X 25
Floor material: (cement) / wood / dirt
Slab Thickness (ft): —
Visible cracks: yes / no
Sub-slab materi: dirt / gravel

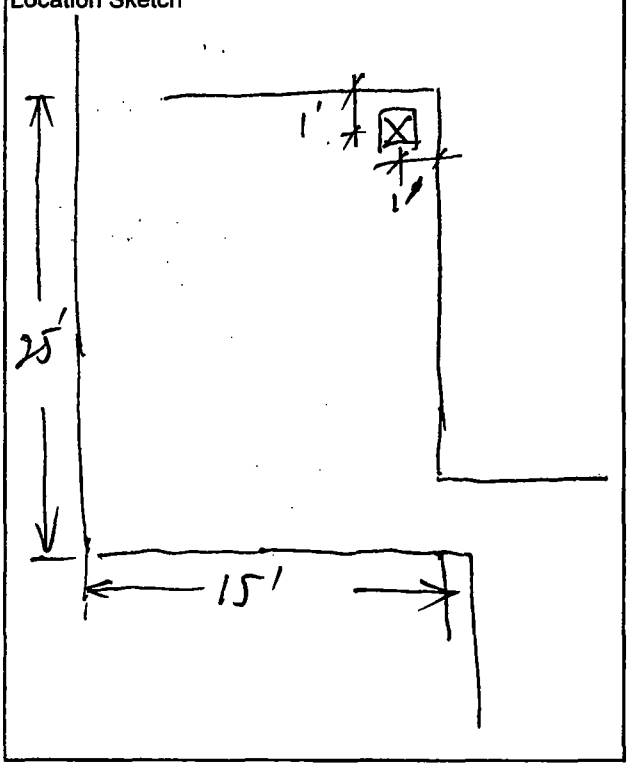
PROBE INSTALLATION

Date
Method
Diameter
Depth
Packing Material

PURGE

Date
Time
Rate
Volume

Location Sketch



SAMPLE COLLECTION

Sample Time: 0820 - 1620
Sample Rate: 11.5 mL/min
Sample Volume: 6L

CONTAINER DESCRIPTION

6 L Summa Canister

Tracer Gas Test [ ] Pass [ ] Fail [X] Not Applicable

ARCADIS
Infrastructure, environment, facilities

Soil-Vapor Sample Log

Sample ID IAQ-2_031108
Date 3/11/08
Time 0825
Weather Clear

Project Name and Number Bally VI / NP597.6
Sampling Personnel PJ

DESCRIPTION OF SAMPLE LOCATION

Outdoor
Location
Est. depth to water (ft)
Soil type
Odor
Color

V Indoor
Location Conduit Office
Basement yes / no
Room size ft x ft 20 X 20
Floor material cement / wood / dirt
Slab Thickness (ft)
Visible cracks yes / no
Sub-slab materi dirt / gravel

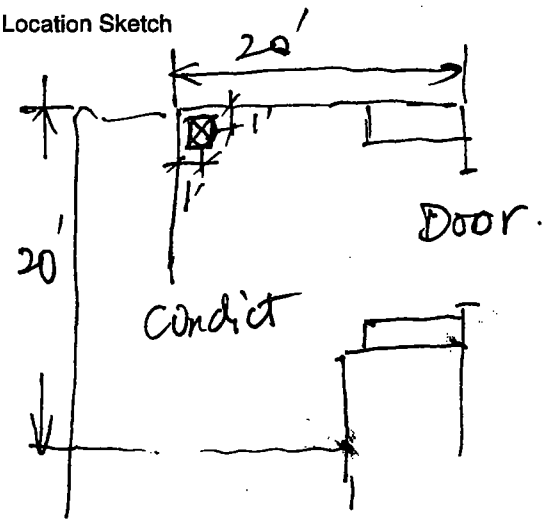
PROBE INSTALLATION

Date
Method
Diameter
Depth
Packing Material

PURGE

Date
Time
Rate
Volume

Location Sketch



SAMPLE COLLECTION

Sample Time 0825 - 1625
Sample Rate 11.5 mL/min
Sample Volume 6L

CONTAINER DESCRIPTION

6 L Summa Canister

Tracer Gas Test ☐ Pass ☐ Fail ☒ Not Applicable

ARCADIS
Infrastructure, environment, facilities

Soil-Vapor Sample Log

Sample ID: SS-1_031208
Date: 3/12/08
Time: 1251
Weather: Cloudy

Project Name and Number: Bally VI / NP597.6
Sampling Personnel: PJ

DESCRIPTION OF SAMPLE LOCATION

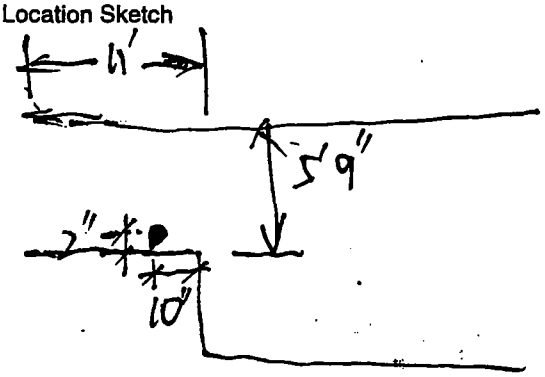
Outdoor
Location
Est. depth to water (ft)
Soil type
Odor
Color

✓ Indoor
Location: Open office area
Basement: yes / (no)
Room size ft x ft: 11'X 5'9"
Floor material: (cement) / wood / dirt
Slab Thickness (ft): 6 1/2"
Visible cracks: yes / (no)
Sub-slab materi: dirt / gravel

PROBE INSTALLATION

Date: 3/12/08
Method: Hammer drill
Diameter: 1/4"
Depth: 6 1/2"
Packing Material: Concrete

Location Sketch



PURGE

Date: 3/12/08
Time: 1251 - 1301
Rate: 100 mL/min
Volume: 1L

SAMPLE COLLECTION

Sample Time: 1301 - 1331
Sample Rate: 167 mL/min
Sample Volume: 6L

CONTAINER DESCRIPTION

6 L Summa Canister

Tracer Gas Test [ ] Pass [ ] Fail [X] Not Applicable

ARCADIS
Infrastructure, environment, facilities

Soil-Vapor Sample Log

Sample ID: SS-2_031208
Date: 3/12/08
Time: 1043
Weather: Cloudy

Project Name and Number: Bally VI/NPS97.6
Sampling Personnel: PJ

DESCRIPTION OF SAMPLE LOCATION

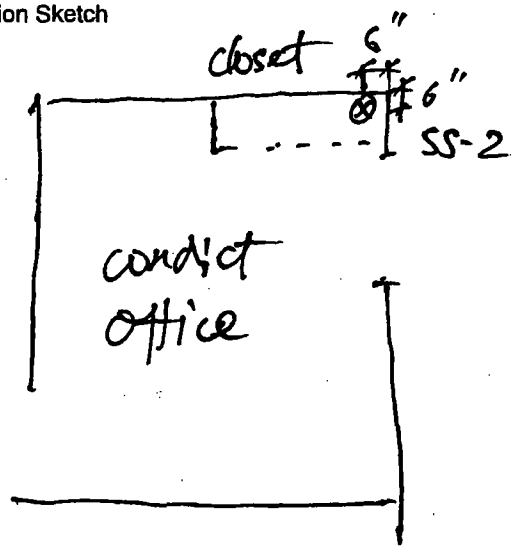
Outdoor
Location
Est. depth to water (ft)
Soil type
Odor
Color

V
Indoor
Location: condict office
Basement: yes / (no)
Room size ft x ft: 20'X20'
Floor material: (cement) / wood / dirt
Slab Thickness (ft): 6 1/2"
Visible cracks: yes / (no)
Sub-slab materi: dirt / gravel

PROBE INSTALLATION

Date: 3/12/08
Method: Hammer drill
Diameter: 1/4"
Depth: 6 1/2"
Packing Material: concrete

Location Sketch



PURGE

Date: 3/12/08
Time: 1033
Rate: 100 mL/min
Volume: 1 L

SAMPLE COLLECTION

Sample Time: 1043
Sample Rate: 167 mL/min
Sample Volume: 6 L

CONTAINER DESCRIPTION

6 L Summa Canister

Tracer Gas Test [ ] Pass [ ] Fail [X] Not Applicable

ARCADIS
Infrastructure, environment, facilities

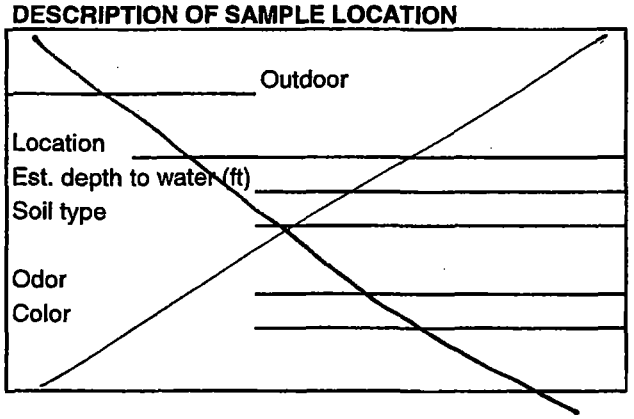
Soil-Vapor Sample Log

Sample ID: SS-2_031208
Date: 3/12/08
Time: 1202
Weather: Cloudy

Project Name and Number: Bally #2 / NP597.6
Sampling Personnel: PJ

DUP: SS-13_031208

DESCRIPTION OF SAMPLE LOCATION



Outdoor

Location
Est. depth to water (ft)
Soil type
Odor
Color

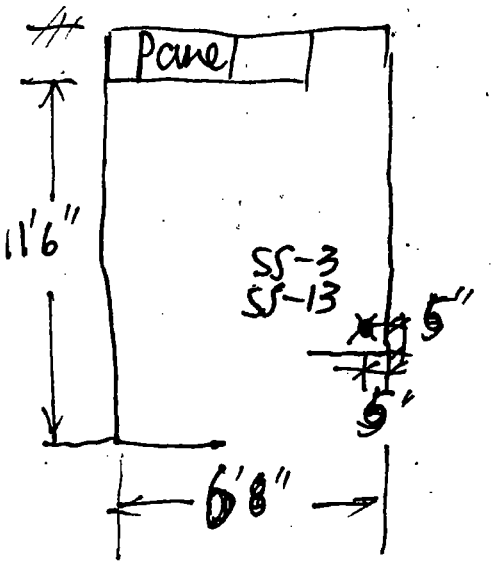
✓ Indoor

Location: Closet
Basement: yes (no)
Room size ft x ft: 11'6" x 6'8"
Floor material: (cement) / wood / dirt
Slab Thickness (ft): 6 1/2"
Visible cracks: yes / (no)
Sub-slab materi: dirt / gravel

PROBE INSTALLATION

Date: 3/12/08
Method: Hammer drill
Diameter: 1/4"
Depth: 6 1/2"
Packing Material: Concrete

Location Sketch



PURGE

Date: 3/12/08
Time: 1152 ~ 1202
Rate: 100 mL/min
Volume: 1L

SAMPLE COLLECTION

Sample Time: 1202 ~ 1232
Sample Rate: 167 mL/min
Sample Volume: 6L

CONTAINER DESCRIPTION

6 L Summa Canister

Tracer Gas Test [ ] Pass [ ] Fail [X] Not Applicable

Appendix C

Laboratory Packages

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Air Toxics Ltd. Introduces the Electronic Report

Thank you for choosing Air Toxics Ltd. To better serve our customers, we are providing your report by e-mail. This document is provided in Portable Document Format which can be viewed with Acrobat Reader by Adobe.

This electronic report includes the following:

- Work order Summary;
- Laboratory Narrative;
- Results; and
- Chain of Custody (copy).

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630

(916) 985-1000 .FAX (916) 985-1020
Hours 8:00 A.M to 6:00 P.M. Pacific

Air Toxics LTD.
AN ENVIRONMENTAL ANALYTICAL LABORATORY

WORK ORDER #: 0803297A

Work Order Summary

CLIENT:	Mr. Christopher Sharpe ARCADIS, Inc. 6 Terry Dr. Suite 300 Newtown, PA 18940	**BILL TO:**	Mr. Christopher Sharpe ARCADIS, Inc. 6 Terry Dr. Suite 300 Newtown, PA 18940
PHONE:	267-685-1800	**P.O. #**	
FAX:		**PROJECT #**	NP597.6 Bally PA
DATE RECEIVED:	03/13/2008	**CONTACT:**	Bryanna Langley
DATE COMPLETED:	03/26/2008		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	IAQ-1_031108	Modified TO-15 SIM	7.0 "Hg	5 psi
01AA	IAQ-1_031108 Lab Duplicate	Modified TO-15 SIM	7.0 "Hg	5 psi
02A	IAQ-2_031108	Modified TO-15 SIM	7.5 "Hg	5 psi
03A	Lab Blank	Modified TO-15 SIM	NA	NA
04A	CCV	Modified TO-15 SIM	NA	NA
05A	LCS	Modified TO-15 SIM	NA	NA

CERTIFIED BY: Linda A. Truman DATE: 03/26/08

Laboratory Director

Certfication numbers: CA NELAP - 02110CA, LA NELAP/LELAP- AI 30763, NJ NELAP - CA004
NY NELAP - 11291, UT NELAP - 9166389892
Name of Accrediting Agency: NELAP/Florida Department of Health, Scope of Application: Clean Air Act,
Accreditation number: E87680, Effective date: 07/01/07, Expiration date: 06/30/08
Air Toxics Ltd. certifies that the test results contained in this report meet all requirements of the NELAC standards

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
Modified TO-15 SIM
Arcadis Geraghty & Miller
Workorder# 0803297A

Two 6 Liter Summa Canister (SIM Certified) samples were received on March 13, 2008. The laboratory performed analysis via modified EPA Method TO-15 using GC/MS in the SIM acquisition mode. The method involves concentrating up to 0.5 liters of air. The concentrated aliquot is then flash vaporized and swept through a water management system to remove water vapor. Following dehumidification, the sample passes directly into the GC/MS for analysis.

This workorder was independently validated prior to submittal using 'USEPA National Functional Guidelines' as generally applied to the analysis of volatile organic compounds in air. A rules-based, logic driven, independent validation engine was employed to assess completeness, evaluate pass/fail of relevant project quality control requirements and verification of all quantified amounts.

Method modifications taken to run these samples are summarized in the table below. Specific project requirements may over-ride the ATL modifications.

Requirement	*TO-15*	*ATL Modifications*
ICAL %RSD acceptance criteria	</=30% RSD with 2 compounds allowed out to < 40% RSD	Project specific; default criteria is </=30% RSD with 10% of compounds allowed out to < 40% RSD
Daily Calibration	+- 30% Difference	Project specific; default criteria is </= 30% Difference with 10% of compounds allowed out up to </=40%.; flag and narrate outliers
Blank and standards	Zero air	Nitrogen
Method Detection Limit	Follow 40CFR Pt.136 App. B	The MDL met all relevant requirements in Method TO-15 (statistical MDL less than the LOQ). The concentration of the spiked replicate may have exceeded 10X the calculated MDL in some cases

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

There were no analytical discrepancies.

Definition of Data Qualifying Flags

Eight qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.
U - Compound analyzed for but not detected above the reporting limit.
UJ- Non-detected compound associated with low bias in the CCV
N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:
a-File was requantified
b-File was quantified by a second column and detector
r1-File was requantified for the purpose of reissue

Summary of Detected Compounds
MODIFIED EPA METHOD TO-15 GC/MS SIM

Client Sample ID: IAQ-1_031108

Lab ID#: 0803297A-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
1,1,1-Trichloroethane	0.035	0.24	0.19	1.3
Trichloroethene	0.035	0.75	0.19	4.0

Client Sample ID: IAQ-1_031108 Lab Duplicate

Lab ID#: 0803297A-01AA

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
1,1,1-Trichloroethane	0.035	0.25	0.19	1.4
Trichloroethene	0.035	0.75	0.19	4.0

Client Sample ID: IAQ-2_031108

Lab ID#: 0803297A-02A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
1,1,1-Trichloroethane	0.036	0.20	0.20	1.1
Trichloroethene	0.036	0.65	0.19	3.5

Air Toxics LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: IAQ-1_031108

Lab ID#: 0803297A-01A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	1031823	**Date of Collection:**	3/11/08
Dil. Factor:	1.75	**Date of Analysis:**	3/19/08 01:35 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Vinyl Chloride	0.018	Not Detected	0.045	Not Detected
1,1-Dichloroethene	0.018	Not Detected	0.069	Not Detected
1,1-Dichloroethane	0.035	Not Detected	0.14	Not Detected
cis-1,2-Dichloroethene	0.035	Not Detected	0.14	Not Detected
1,1,1-Trichloroethane	0.035	0.24	0.19	1.3
Trichloroethene	0.035	0.75	0.19	4.0

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	110	70-130
Toluene-d8	103	70-130
4-Bromofluorobenzene	100	70-130

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: IAQ-1_031108 Lab Duplicate

Lab ID#: 0803297A-01AA

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	1031824	Date of Collection:	3/11/08
Dil. Factor:	1.75	Date of Analysis:	3/19/08 02:20 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Vinyl Chloride	0.018	Not Detected	0.045	Not Detected
1,1-Dichloroethene	0.018	Not Detected	0.069	Not Detected
1,1-Dichloroethane	0.035	Not Detected	0.14	Not Detected
cis-1,2-Dichloroethene	0.035	Not Detected	0.14	Not Detected
1,1,1-Trichloroethane	0.035	0.25	0.19	1.4
Trichloroethene	0.035	0.75	0.19	4.0

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	110	70-130
Toluene-d8	104	70-130
4-Bromofluorobenzene	99	70-130

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: IAQ-2_031108

Lab ID#: 0803297A-02A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	1031822	**Date of Collection:**	3/11/08
Dil. Factor:	1.79	**Date of Analysis:**	3/19/08 12:29 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Vinyl Chloride	0.018	Not Detected	0.046	Not Detected
1,1-Dichloroethene	0.018	Not Detected	0.071	Not Detected
1,1-Dichloroethane	0.036	Not Detected	0.14	Not Detected
cis-1,2-Dichloroethene	0.036	Not Detected	0.14	Not Detected
1,1,1-Trichloroethane	0.036	0.20	0.20	1.1
Trichloroethene	0.036	0.65	0.19	3.5

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	108	70-130
Toluene-d8	103	70-130
4-Bromofluorobenzene	100	70-130

Client Sample ID: Lab Blank

Lab ID#: 0803297A-03A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	1031805	Date of Collection: NA	
Dil. Factor:	1.00	Date of Analysis: 3/18/08 12:08 PM	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Vinyl Chloride	0.010	Not Detected	0.026	Not Detected
1,1-Dichloroethene	0.010	Not Detected	0.040	Not Detected
1,1-Dichloroethane	0.020	Not Detected	0.081	Not Detected
cis-1,2-Dichloroethene	0.020	Not Detected	0.079	Not Detected
1,1,1-Trichloroethane	0.020	Not Detected	0.11	Not Detected
Trichloroethene	0.020	Not Detected	0.11	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	110	70-130
Toluene-d8	103	70-130
4-Bromofluorobenzene	100	70-130

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: CCV

Lab ID#: 0803297A-04A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	1031802	Date of Collection: NA	
Dil. Factor:	1.00	Date of Analysis: 3/18/08 09:04 AM	

Compound	%Recovery
Vinyl Chloride	121
1,1-Dichloroethene	108
1,1-Dichloroethane	106
cis-1,2-Dichloroethene	100
1,1,1-Trichloroethane	103
Trichloroethene	81

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	113	70-130
Toluene-d8	106	70-130
4-Bromofluorobenzene	99	70-130

Air Toxics LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: LCS

Lab ID#: 0803297A-05A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	1031803	Date of Collection: NA	
Dil. Factor:	1.00	Date of Analysis: 3/18/08 09:58 AM	

Compound	%Recovery
Vinyl Chloride	115
1,1-Dichloroethene	119
1,1-Dichloroethane	111
cis-1,2-Dichloroethene	105
1,1,1-Trichloroethane	107
Trichloroethene	86

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	111	70-130
Toluene-d8	107	70-130
4-Bromofluorobenzene	100	70-130

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Air Toxics Ltd. Introduces the Electronic Report

Thank you for choosing Air Toxics Ltd. To better serve our customers, we are providing your report by e-mail. This document is provided in Portable Document Format which can be viewed with Acrobat Reader by Adobe.

This electronic report includes the following:

- Work order Summary;
- Laboratory Narrative;
- Results; and
- Chain of Custody (copy).

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630

(916) 985-1000 .FAX (916) 985-1020
Hours 8:00 A.M to 6:00 P.M. Pacific

Air Toxics LTD.
AN ENVIRONMENTAL ANALYTICAL LABORATORY

WORK ORDER #: 0803297B

Work Order Summary

CLIENT:	Mr. Christopher Sharpe ARCADIS, Inc. 6 Terry Dr. Suite 300 Newtown, PA 18940	**BILL TO:**	Mr. Christopher Sharpe ARCADIS, Inc. 6 Terry Dr. Suite 300 Newtown, PA 18940
PHONE:	267-685-1800	**P.O. #**	
FAX:		**PROJECT #**	NP597.6 Bally PA
DATE RECEIVED:	03/13/2008	**CONTACT:**	Bryanna Langley
DATE COMPLETED:	03/26/2008		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
03A	SS-1_031208	Modified TO-15 LL	9.0 "Hg	5 psi
04A	SS-13_031208	Modified TO-15 LL	10.0 "Hg	5 psi
05A	SS-2_031208	Modified TO-15 LL	8.5 "Hg	5 psi
06A	SS-3_031208	Modified TO-15 LL	9.5 "Hg	5 psi
06AA	SS-3_031208 Lab Duplicate	Modified TO-15 LL	9.5 "Hg	5 psi
07A	Lab Blank	Modified TO-15 LL	NA	NA
08A	CCV	Modified TO-15 LL	NA	NA
09A	LCS	Modified TO-15 LL	NA	NA

CERTIFIED BY: Linda A. Truman DATE: 03/26/08

Laboratory Director

Certfication numbers: CA NELAP - 02110CA, LA NELAP/LELAP- AI 30763, NJ NELAP - CA004
NY NELAP - 11291, UT NELAP - 9166389892
Name of Accrediting Agency: NELAP/Florida Department of Health, Scope of Application: Clean Air Act,
Accreditation number: E87680, Effective date: 07/01/07, Expiration date: 06/30/08
Air Toxics Ltd. certifies that the test results contained in this report meet all requirements of the NELAC standards

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
Modified TO-15
Arcadis Geraghty & Miller
Workorder# 0803297B

Four 6 Liter Summa Canister (100% Certified) samples were received on March 13, 2008. The laboratory performed analysis via modified EPA Method TO-15 using GC/MS in the full scan mode. The method involves concentrating up to 1.0 liter of air. The concentrated aliquot is then flash vaporized and swept through a water management system to remove water vapor. Following dehumidification, the sample passes directly into the GC/MS for analysis.

This workorder was independently validated prior to submittal using 'USEPA National Functional Guidelines' as generally applied to the analysis of volatile organic compounds in air. A rules-based, logic driven, independent validation engine was employed to assess completeness, evaluate pass/fail of relevant project quality control requirements and verification of all quantified amounts.

Method modifications taken to run these samples are summarized in the table below. Specific project requirements may over-ride the ATL modifications.

Requirement	*TO-15*	*ATL Modifications*
ICAL %RSD acceptance criteria	+- 30% RSD with 2 compounds allowed out to < 40% RSD	30% RSD with 4 compounds allowed out to < 40% RSD
Daily Calibration	+- 30% Difference	</= 30% Difference with four allowed out up to </=40%.; flag and narrate outliers
Blank and standards	Zero air	Nitrogen
Method Detection Limit	Follow 40CFR Pt.136 App. B	The MDL met all relevant requirements in Method TO-15 (statistical MDL less than the LOQ). The concentration of the spiked replicate may have exceeded 10X the calculated MDL in some cases
Sample collection media	Summa canister	ATL recommends use of summa canisters to insure data defensibility, but will report results from Tedlar bags at client request

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

There were no analytical discrepancies.

Definition of Data Qualifying Flags

Eight qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.
E - Exceeds instrument calibration range.
S - Saturated peak.
Q - Exceeds quality control limits.
U - Compound analyzed for but not detected above the reporting limit.
UJ- Non-detected compound associated with low bias in the CCV
N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:
a-File was requantified
b-File was quantified by a second column and detector
r1-File was requantified for the purpose of reissue

Summary of Detected Compounds
MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

Client Sample ID: SS-1_031208

Lab ID#: 0803297B-03A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Trichloroethene	0.19	0.25	1.0	1.3

Client Sample ID: SS-13_031208

Lab ID#: 0803297B-04A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
1,1,1-Trichloroethane	0.20	0.27	1.1	1.5
Trichloroethene	0.20	0.87	1.1	4.7

Client Sample ID: SS-2_031208

Lab ID#: 0803297B-05A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
1,1,1-Trichloroethane	0.19	0.19	1.0	1.0

Client Sample ID: SS-3_031208

Lab ID#: 0803297B-06A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
1,1,1-Trichloroethane	0.20	0.19 J	1.1	1.0 J
Trichloroethene	0.20	0.78	1.0	4.2

Client Sample ID: SS-3_031208 Lab Duplicate

Lab ID#: 0803297B-06AA

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Trichloroethene	0.20	0.70	1.0	3.7

Air Toxics LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: SS-1_031208

Lab ID#: 0803297B-03A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	g032212	**Date of Collection:**	3/12/08
Dil. Factor:	1.91	**Date of Analysis:**	3/22/08 04:20 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Vinyl Chloride	0.19	Not Detected	0.49	Not Detected
1,1-Dichloroethene	0.19	Not Detected	0.76	Not Detected
1,1-Dichloroethane	0.19	Not Detected	0.77	Not Detected
cis-1,2-Dichloroethene	0.19	Not Detected	0.76	Not Detected
1,1,1-Trichloroethane	0.19	Not Detected	1.0	Not Detected
Trichloroethene	0.19	0.25	1.0	1.3

Container Type: 6 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	110	70-130
Toluene-d8	97	70-130
4-Bromofluorobenzene	105	70-130

Air Toxics LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: SS-13_031208

Lab ID#: 0803297B-04A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	g032213	Date of Collection:	3/12/08
Dil. Factor:	2.01	Date of Analysis:	3/22/08 05:04 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Vinyl Chloride	0.20	Not Detected	0.51	Not Detected
1,1-Dichloroethene	0.20	Not Detected	0.80	Not Detected
1,1-Dichloroethane	0.20	Not Detected	0.81	Not Detected
cis-1,2-Dichloroethene	0.20	Not Detected	0.80	Not Detected
1,1,1-Trichloroethane	0.20	0.27	1.1	1.5
Trichloroethene	0.20	0.87	1.1	4.7

Container Type: 6 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	109	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	100	70-130

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: SS-2_031208

Lab ID#: 0803297B-05A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	g032214	**Date of Collection:**	3/12/08
Dil. Factor:	1.87	**Date of Analysis:**	3/22/08 05:53 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Vinyl Chloride	0.19	Not Detected	0.48	Not Detected
1,1-Dichloroethene	0.19	Not Detected	0.74	Not Detected
1,1-Dichloroethane	0.19	Not Detected	0.76	Not Detected
cis-1,2-Dichloroethene	0.19	Not Detected	0.74	Not Detected
1,1,1-Trichloroethane	0.19	0.19	1.0	1.0
Trichloroethene	0.19	Not Detected	1.0	Not Detected

Container Type: 6 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	121	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	101	70-130

Air Toxics LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: SS-3_031208

Lab ID#: 0803297B-06A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	g032215	**Date of Collection:**	3/12/08
Dil. Factor:	1.96	**Date of Analysis:**	3/22/08 06:32 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Vinyl Chloride	0.20	Not Detected	0.50	Not Detected
1,1-Dichloroethene	0.20	Not Detected	0.78	Not Detected
1,1-Dichloroethane	0.20	Not Detected	0.79	Not Detected
cis-1,2-Dichloroethene	0.20	Not Detected	0.78	Not Detected
1,1,1-Trichloroethane	0.20	0.19 J	1.1	1.0 J
Trichloroethene	0.20	0.78	1.0	4.2

J = Estimated value.

Container Type: 6 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	106	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	100	70-130

Air Toxics LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: SS-3_031208 Lab Duplicate

Lab ID#: 0803297B-06AA

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	g032216	**Date of Collection:**	3/12/08
Dil. Factor:	1.96	**Date of Analysis:**	3/22/08 07:23 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Vinyl Chloride	0.20	Not Detected	0.50	Not Detected
1,1-Dichloroethene	0.20	Not Detected	0.78	Not Detected
1,1-Dichloroethane	0.20	Not Detected	0.79	Not Detected
cis-1,2-Dichloroethene	0.20	Not Detected	0.78	Not Detected
1,1,1-Trichloroethane	0.20	Not Detected	1.1	Not Detected
Trichloroethene	0.20	0.70	1.0	3.7

Container Type: 6 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	114	70-130
Toluene-d8	97	70-130
4-Bromofluorobenzene	114	70-130

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: Lab Blank

Lab ID#: 0803297B-07A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	g032207	Date of Collection: NA	
Dil. Factor:	1.00	Date of Analysis: 3/22/08 12:10 PM	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Vinyl Chloride	0.10	Not Detected	0.26	Not Detected
1,1-Dichloroethene	0.10	Not Detected	0.40	Not Detected
1,1-Dichloroethane	0.10	Not Detected	0.40	Not Detected
cis-1,2-Dichloroethene	0.10	Not Detected	0.40	Not Detected
1,1,1-Trichloroethane	0.10	Not Detected	0.54	Not Detected
Trichloroethene	0.10	Not Detected	0.54	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	110	70-130
Toluene-d8	97	70-130
4-Bromofluorobenzene	97	70-130

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: CCV

Lab ID#: 0803297B-08A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	g032204	Date of Collection: NA	
Dil. Factor:	1.00	Date of Analysis: 3/22/08 09:45 AM	

Compound	%Recovery
Vinyl Chloride	94
1,1-Dichloroethene	84
1,1-Dichloroethane	98
cis-1,2-Dichloroethene	96
1,1,1-Trichloroethane	105
Trichloroethene	94

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	115	70-130
Toluene-d8	103	70-130
4-Bromofluorobenzene	104	70-130

Air Toxics LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: LCS

Lab ID#: 0803297B-09A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	g032205	Date of Collection: NA	
Dil Factor:	1.00	Date of Analysis: 3/22/08 10:26 AM	

Compound	%Recovery
Vinyl Chloride	103
1,1-Dichloroethene	80
1,1-Dichloroethane	106
cis-1,2-Dichloroethene	106
1,1,1-Trichloroethane	110
Trichloroethene	98

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	119	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	97	70-130

Appendix D

Data Validation Report

DATA VALIDATION CHECKLIST

ARCADIS
6 Terry Drive, Suite 300
Newtown, PA 18940
Phone: 267.685.1800
Fax: 267.685.1801

Project Name:	Bally, PA
Project Number:	NP000597.0006.00007
Sample Date(s):	March 11, 2008
Sample Team:	P. Jin
Matrix/Number of Samples: Air/ 4 samples	Air / 2 Duplicates/ 0 Trip Blanks / 0 Field Blanks/ 0
Analyzing Laboratory:	Air Toxics Ltd., Folsom, California
Analyses:	Volatile organic compounds (VOCs) by USEPA method Modified TO-15 SIM

Laboratory Report Job Number: 0803297A Dated: April 1, 2008

ANALYTICAL DATA PACKAGE DOCUMENTATION
GENERAL INFORMATION

	Reported		Performance Acceptable		Not
	No	Yes	No	Yes	Required
1. Sample results		X		X	
2. Parameters analyzed		X		X	
3. Method of analysis		X		X	
4. Sample collection date		X		X	
5. Laboratory sample received date		X		X	
6. Sample preparation/extraction date		X		X	
7. Sample analysis date		X		X	
8. Copy of chain-of-custody form signed by lab sample custodian		X		X	
9. Narrative summary of QA or sample problems provided		X		X	

QA - quality assurance

Comments:

An Arcadis Level IV data validation was conducted on the data. Analytical data were validated in accordance with "Region III Modifications to National Functional Guidelines for Organic Data Review Multi-Media, Multi-Concentration (OLM01.0-OLM01.9)" (September 1994); Region II SOP document USEPA Hazardous Waste Support Branch: Validating Air Samples, Volatile Organics Analysis of Ambient Air in Canisters By Method TO-15, October 2006, SOP #HW-31 Revision 4; and, ARCADIS professional judgment. Calculations to reproduce reported data were performed as part of the ARCADIS Level IV review process. Field data, field notes, and sampling logs were not reviewed.

ORGANIC ANALYSES
VOCs

	Reported		Performance Acceptable		Not
	No	Yes	No	Yes	Required
1. Holding times		X		X	
2. Blanks					
A. Method blank		X		X	
B. Field blanks					X
C. Trip blanks					X
3. GC/MS Instrument performance check		X		X	
4. Initial calibration RRF's and %RSD's		X		X	
5. Continuing calibration RRF's and %D's		X		X	
6. Matrix spike (MS) %R					X
7. Matrix spike duplicate (MSD) %R					X
8. Laboratory duplicate precision (RPD)		X		X	
9. Laboratory control sample (LCS) %R		X		X	
10. Surrogate spike recoveries		X		X	
11. Internal standard retention times and areas		X		X	
12. Compound identification and quantization		X		X	
13. Field duplicate comparison					X

VOCs - volatile organic compounds
%D - percent difference
RRF - relative response factor
%R - percent recovery
%RSD - percent relative standard deviation
RPD - relative percent difference

Comments:
Performance was acceptable with the following notes:

1. Samples were run within 14 days of verified time of sample receipt (VTSR). Qualification of the sample data was not necessary.

2. One method blank was associated with the samples. Target compounds were not detected in the method blank. Qualification of the sample data was not necessary.

3. All normalized bromofluorobenzene (BFB) relative % abundance values met ion abundance criteria; and selected relative % abundance values were found reproducible through calculation.

4. One initial calibration was associated with samples. All target compound RRFs and %RSDs met QC criteria of greater than or equal to 0.05 and less than 30%, respectively. All selected RRF and %RSD values were found reproducible through calculation

5. One continuing calibration was associated with samples. All target compound RRFs and %Ds met QC criteria of greater than or equal to 0.05 and less than 25%, respectively. All selected RRF and %D values were found reproducible through calculation.

8. A laboratory duplicate analysis was performed on sample IAQ-1_031108. The relative percent differences (RPDs) between the sample results and duplicate analysis were within the control limit of 20%. Qualification of the sample data was not necessary.

9. All target compound laboratory control sample (LCS) %Rs were within the QC criteria of 60%-140%.

10. All target compound surrogate %Rs were within the QC criteria of 70%-130%.

11. All target compound internal standard area and retention time values were within the QC criteria of +/- 0.33 minutes (or 20 seconds) and +/- 40%, respectively.

12. All detected target compounds were verified by: review of the compound's spectra against laboratory standard spectra; review and selected calculation of relative response time (RRT) to be within +/- 0.06 RRT units of the standard RRT; and, recalculation of selected compound concentrations.

DATA VALIDATION CHECKLIST
SUMMARY AND DATA QUALIFIER CODES

Job Number: 0803297A

Sample ID	Analyte(s)	Qualifier	Reason(s)
VOC			
Qualification of the data was not necessary			

VALIDATION PERFORMED BY/DATE: James E. Tezak April 12, 2008

VALIDATION REVIEWED BY SIGNATURE: James E. Tezak

PEER REVIEW: Donna M. Brown April 14, 2008

DATA VALIDATION CHECKLIST

ARCADIS
6 Terry Drive, Suite 300
Newtown, PA 18940
Phone: 267.685.1800
Fax: 267.685.1801

Project Name:	Bally, PA
Project Number:	NP000597.0006.00007
Sample Date(s):	March 12, 2008
Sample Team:	P. Jin
Matrix/Number of Samples: Air/ 4 samples	Air / 3 Duplicates/ 1 Trip Blanks / 0 Field Blanks/ 0
Analyzing Laboratory:	Air Toxics Ltd., Folsom, California
Analyses:	Volatile organic compounds (VOCs) by USEPA method Modified TO-15 SIM

Laboratory Report Job Number: 0803297B Dated: April 1, 2008

ANALYTICAL DATA PACKAGE DOCUMENTATION
GENERAL INFORMATION

	Reported		Performance Acceptable		Not
	No	Yes	No	Yes	Required
1. Sample results		X		X	
2. Parameters analyzed		X		X	
3. Method of analysis		X		X	
4. Sample collection date		X		X	
5. Laboratory sample received date		X		X	
6. Sample preparation/extraction date		X		X	
7. Sample analysis date		X		X	
8. Copy of chain-of-custody form signed by lab sample custodian		X		X	
9. Narrative summary of QA or sample problems provided		X		X	

QA - quality assurance

Comments:

An Arcadis Level IV data validation was conducted on the data. Analytical data were validated in accordance with "Region III Modifications to National Functional Guidelines for Organic Data Review Multi-Media, Multi-Concentration (OLM01.0-OLM01.9)" (September 1994); Region II SOP document USEPA Hazardous Waste Support Branch: Validating Air Samples, Volatile Organics Analysis of Ambient Air in Canisters By Method TO-15, October 2006, SOP #HW-31 Revision 4; and, ARCADIS professional judgment. Calculations to reproduce reported data were performed as part of the ARCADIS Level IV review process. Field data, field notes, and sampling logs were not reviewed.

ORGANIC ANALYSES
VOCs

	Reported		Performance Acceptable		Not
	No	Yes	No	Yes	Required
1. Holding times		X		X	
2. Blanks					
A. Method blank		X		X	
B. Field blanks					X
C. Trip blanks					X
3. GC/MS Instrument performance check		X		X	
4. Initial calibration RRF's and %RSD's		X		X	
5. Continuing calibration RRF's and %D's		X		X	
6. Matrix spike (MS) %R					X
7. Matrix spike duplicate (MSD) %R					X
8. Laboratory duplicate precision (RPD)		X		X	
9. Laboratory control sample (LCS) %R		X		X	
10. Surrogate spike recoveries		X		X	
11. Internal standard retention times and areas		X		X	
12. Compound identification and quantization		X		X	
13. Field duplicate comparison					X

VOCs - volatile organic compounds
%D - percent difference
RRF - relative response factor
%R - percent recovery
%RSD - percent relative standard deviation
RPD - relative percent difference

Comments:
Performance was acceptable with the following notes:

1. Samples were run within 14 days of verified time of sample receipt (VTSR). Qualification of the sample data was not necessary.

2. One method blank was associated with the samples. Target compounds were not detected in the method blank. Qualification of the sample data was not necessary.

3. All normalized bromofluorobenzene (BFB) relative % abundance values met ion abundance criteria; and selected relative % abundance values were found reproducible through calculation.

4. One initial calibration was associated with samples. All target compound RRFs and %RSDs met QC criteria of greater than or equal to 0.05 and less than 30%, respectively. All selected RRF and %RSD values were found reproducible through calculation

5. One continuing calibration was associated with samples. All target compound RRFs and %Ds met QC criteria of greater than or equal to 0.05 and less than 25%, respectively. All selected RRF and %D values were found reproducible through calculation.

8. A laboratory duplicate analysis was performed on sample SS-3_031208. The relative percent differences (RPDs) between the sample results and duplicate analysis were within the control limit of 20%. Qualification of the sample data was not necessary.

9. All target compound laboratory control sample (LCS) %Rs were within the QC criteria of 60%-140%.

10. All target compound surrogate %Rs were within the QC criteria of 70%-130%.

11. All target compound internal standard area and retention time values were within the QC criteria of +/- 0.33 minutes (or 20 seconds) and +/- 40%, respectively.

12. All detected target compounds were verified by: review of the compound's spectra against laboratory standard spectra; review and selected calculation of relative response time (RRT) to be within +/- 0.06 RRT units of the standard RRT; and, recalculation of selected compound concentrations.

13. Sample SS-13_031208 was a field duplicate of SS-3_032108. The relative percent differences (RPDs) between the field duplicate results were 10.9 for trichloroethene and 34.8 for 1,1,1-trichloroethane. The RPD for 1,1,1-trichloroethane exceeded the control limit of 20. However, the high RPD was due to the low concentrations in the sample and field duplicate. Since sample concentrations were less than five times the reporting limit, a control limit of two times the reporting limit was used instead of the 20% RPD to evaluate the field duplicate results for 1,1,1-trichloroethane. Results for 1,1,1-trichloroethan were within this control limit. Qualification of the sample data was not necessary.

DATA VALIDATION CHECKLIST
SUMMARY AND DATA QUALIFIER CODES

Job Number: 0803297B

Sample ID	Analyte(s)	Qualifier	Reason(s)
VOC			
Qualification of the data was not necessary			

VALIDATION PERFORMED BY/DATE: James E. Tezak April 14, 2008

VALIDATION REVIEWED BY SIGNATURE: James E. Tezak

PEER REVIEW: Donna M. Brown April 14, 2008

ARCADIS

Infrastructure, environment, facilities

ARCADIS G&M, Inc.
6 Terry Drive
Suite 300
Newtown
Pennsylvania 18940
Tel 267 685 1800
Fax 267 685 1801
www.arcadis-us.com

ENVIRONMENT

Transmittal Letter

To:
Mitch Cron
USEPA Region III
Hazardous Site Cleanup Division (3HS22)
1650 Arch Street
Philadelphia, PA 19103

Copies:

From:
Frank C. Natitus

Date:
15 August 2008

Subject:
Former Bally Engineered Structures Facility
Bally Borough, Berks County, Pennsylvania

ARCADIS Project No.:
NP000597.0006.00006

We are sending you:

☐ **Attached** ☐ **Under Separate Cover Via _____ the Following Items:**

☐ Shop Drawings ☐ Plans ☐ Specifications ☐ Change Order
☐ Prints ☐ Samples ☐ Copy of Letter ☐ Reports
☐ Other:

Copies	Date	Drawing No.	Rev.	Description	Action*
2	08/15/08			Facility (Office Buiding) Vapor Intrusion Evaluation Summary Former Bally Engineered Structures Facility	

Action*

☐ A Approved ☐ CR Correct and Resubmit ☐ Resubmit _____ Copies
☐ AN Approved As Noted ☐ F File ☐ Return _____ Copies
☐ AS As Requested ☐ FA For Approval ☐ Review and Comment
☐ Other:

Mailing Method

☐ U.S. Postal Service 1st Class ☐ Courier/Hand Delivery ☒ FedEx Priority Overnight ☐ FedEx 2-Day Delivery
☐ Certified/Registered Mail ☐ United Parcel Service (UPS) ☐ FedEx Standard Overnight ☐ FedEx Economy
☐ Other:

Comments:

SDMS US EPA Region III

Imagery Insert Form

Site Name: Bally Groundwater Document ID: 2095161

Some images in this document may be illegible or unavailable in SDMS. Please see reason(s) indicated below:

☐ ILLEGIBLE due to bad source documents. Images(s) in SDMS equivalent to hard copy.

Specify Type of Document(s) / Comments:

☐ Includes ____ COLOR or ____ RESOLUTION variations. Unless otherwise noted, these pages are available in monochrome. The source document page(s) is more legible than the images. The original document is available for viewing at the Superfund Records Center.

Specify Type of Document(s) / Comments:

☐ RESTRICTED CONFIDENTIAL BUSINESS INFORMATION (CBI-R):
Restricted or copyrighted documents that cannot be imaged.

Specify Type of Document(s) / Comments:

☒ UNSCANNABLE MATERIAL:
___ Oversized or X Format. Due to certain scanning equipment capability limitations, the document page(s) is not available in SDMS. The original document is available for viewing at the EPA Region 3 Superfund Records Center.

Specify Type of Document(s) / Comments:

CD: Facility Office Building Vapor Intrusion Evaluation Summary Appendix C

☒ Document is available at the EPA Region 3 Superfund Records Center.

Specify Type of Document(s) / Comments:

AR101308